**Considerations in Restoring Research Activity During the COVID-19 Pandemic**

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This document outlines considerations for restoring university research operations that have been impacted by the COVID-19 pandemic. All universities in the Association of American Universities (AAU) have maintained research activity that is considered “essential” or “critical”, although the definitions naturally vary between institutions. Similarly, the vast majority of AAU universities have severely curtailed and discouraged research-related activity that does not fall into this category and does not allow for social distancing. Generally, curtailments include on-campus research across all fields of study, as well as activity that requires travel or field-work that is incompatible with social distancing.

As the public health aspects of the pandemic are becoming better-understood, universities are resuming the curtailed non-essential/non-critical research activity. At the same time, there remain many questions regarding the COVID-19 pandemic, including its transmissibility and the immunity of recovered individuals, the volume of testing that will be available, how vaccines and therapeutics might develop, and the future density of cases in any given community. In this present context, the **broad practices** and **general questions** provided below are intended to assist university leadership in crafting policies appropriate to their own institution in navigating the planning process. The document also may be of interest to funding agencies and others engaged with the university research enterprise.

The ideas contained in this document reflect input from conversations with many AAU senior research officers, as well as documents made available online by the University of California System and others. The document was prepared in May 2020, and many of the considerations will evolve as the global situation develops.

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**Broadly Anticipated Practices**

The following are broad practices that we anticipate most universities will follow in ramping up research activity.

* **Following public health guidelines from authorities.**

Universities are part of the broader communities in which they are located, and are naturally subject to governance from local, state, and national authorities. During the COVID-19 pandemic, universities have partnered closely with public health authorities to accommodate the needs and leverage the capabilities of research efforts, and they expect to continue to do so as activity ramps up.

* **Preparing for a resurgence of COVID-19 and changes in recommended best practices.**

The public health situation is unlikely to improve monotonically, and an understanding of how to prevent transmissibility and of the level of risk to various people will evolve. Both at the institutional level and for individual programs, leaders will plan to navigate a shifting landscape where social distancing requirements may be relaxed, but then imposed again on short notice. Such uncertainty will create a range of challenges, depending on the type of research, with greater impacts on studies with longer duration and lead times.

* **Protecting the health and safety of all individuals who are involved in the research enterprise.**

Universities have obligations to protect health and safety as a highest priority. This includes students, employees directly involved in the research enterprise, other university staff, participants in human subjects studies, and community members (including the families of those directly engaged with research activity). Health in this case must be defined broadly, including possible infection with COVID-19, and also laboratory safety. A particular focus may be needed on the mental health of researchers, especially students and postdocs who might not have a local social support network. The experience of international members of the research community may be of special concern if they feel unwelcome in the community.

* **Coordinating research ramp-up with other university and community operations, especially those related to health and safety.**

Universities are large and complex organizations embedded within larger communities, and research is only one aspect of their activities. Any plan for research will have connections with other operations, such as facilities support, public transportation, public safety, classroom and online education, information technology, and others. Many universities are also closely connected with local hospitals and health care systems, and they will coordinate research efforts with those entities. Furthermore, researchers themselves are part of the community proximate to the university, and thus the availability of community support structures (e.g., public transportation) is critical to planning. Coordination with community operations may be a particular consideration in some regions where the university is among the largest employers.

* **Maintaining a process for researchers, students, and staff to opt out of returning to in-person interactions.**

Some students, staff, and faculty may feel that the possibility of infection is too great for them to personally accept the risk of engaging with in-person contact required for their research-related activities. Universities generally are considering accommodations for such individuals, although they may need to develop a process for evaluation and approval of accommodations to protect privacy and ensure fairness among employees. Sponsor guidelines or other rules might prevent the individuals from receiving salary support if their work cannot be performed. In the long run, some jobs do require in-person interactions as a condition of employment, and the duration of the pandemic may require long-term changes. Even in that context, however, students and postdocs may need special consideration to allow them to complete their training.

* **Complying with ethical, legal, and safety requirements of specific research programs, as well as those imposed by research funding sponsors.**

The research enterprise is highly regulated and constrained by the requirements for safe, legal, and ethical conduct. Research conduct must follow these requirements even under the current circumstances for the protection of all involved, and for the good stewardship of federal and other sponsor funds. Similarly, research sponsored by external funders must follow the terms and conditions that accompany those funds.

* **Continuing to promote remote research activity**

Many fields of research activity, e.g., in the computational sciences, lend themselves to continuation without in-person contact. Furthermore, in all fields of research, much day-to-day activity, e.g., mentoring conversations, collaboration discussions, seminars, data analysis, and writing, also allow for continuing such activities without in-person contact. Until the pandemic is much better-controlled, the preponderance of such activities is expected to continue remotely, with appropriate communication tools, mentoring, and oversight all applied.

* **Addressing the specific needs of research that can only be done on campus.**

Some fields of research require that work be done on campus or in other situations that require personal proximity to others. In those cases, appropriate PPE is expected to be made available for the faculty, staff, and students who are needed to perform the research and those who support them. Training in the use of PPE and social distancing, appropriate cleaning of surfaces, and the availability of hand washing stations and other sanitation measures are all anticipated to become part of standard operations for the duration of the pandemic. The details of how these needs are addressed will vary across institutions and within institutions, and may now be pertinent to fields where PPE and sanitation measures were not previously required, e.g., archival and library research.

**Questions to be Addressed**

The following are questions that university leadership may want to consider related to research ramp-up, although many are also relevant to broader university operations. Some lend themselves to formal and public statements of policy, others are likely to be better-handled on a case-by-case basis with an informal approach.

Naturally, every decision must be approached as a matter of “risk management”, in that any reengagement of researchers and staff that brings them into proximity with others will likely increase the possibility of transmission. This balance should be recognized *prima facie*, and the approaches and risks evaluated over time against the potential benefits.

**1. How to phase in the restoration of full research operations with reduced social distancing?**

The restoration of full research operations that require in-person contacts will be limited by a number of logistical, financial, and public health considerations. For many universities, it may be most practical to tie the increase in research activity to formal stages that depend on the local prevalence of COVID-19 infections. Other considerations include the availability of testing, the availability and training for use of PPE, the availability and distribution of hand sanitizer, the ability of facilities management to clean and maintain the spaces, and the availability of support within the university and the community (e.g., custodial services, suppliers, and public transportation). Each of these issues comes with significant operational challenges, e.g., the sourcing, purchasing, and distribution of sufficient PPE to researchers in a fair and cost-effective manner that ensure all people on campus are appropriately protected.

**2. What sort of contact-tracing, transmission modeling, and testing protocols will be required for the presence of researchers on campus?**

Many governments and organizations are considering or implementing testing and tracing of contacts between individuals, in order to identify possible transmissions. Some universities are adapting transmission models to the campus-level. The availability of testing and cell phone apps, and the capacity to track, encourage, and enforce a regimen of distancing/isolation based on the gathered information, will all be considerations in whether university research operations would implement such protocols. Efforts could be voluntary or mandatory, and testing could be required centrally or could be conducted by personal health care providers. Different procedures also may be required for researchers who are working off-campus, for example at field stations or where different laws apply. Any effort in this area also will naturally be accompanied by privacy concerns and civil liberty issues.

**3. What sort of plan will be needed to start operations for any given building, department, group, or project?**

The nature of research activities varies widely among researchers, even activities within a given research group, and the nature of the space configurations also varies widely. While some standards can be set broadly, such as the safe amount of space per person in a room, local needs may require a high degree of local variation in plans for ramping up research. Furthermore, local plans will need to be flexible to accommodate new group members and progress in research that requires different activities.

Local plans might include consideration of some of the following criteria:

* + Space for sufficient distancing, including the incorporation of shift work, partitioning of common areas, way-finding guidance for movement within halls and stairways, and lowering occupancy in restrooms.
  + Clear rules in cases where two or more people need to be in close proximity, i.e., for training in complex lab procedures or for moving equipment
  + Availability of the building from the standpoint of custodial services, public safety, etc.
  + Listing of the students, staff, and others participating, and any known required personal accommodations for health or disability conditions
  + Likely contact with others (collaborators, safety staff, core facility staff, human subjects, visitors, etc.)
  + Sufficient availability of PPE and disinfectant for both COVID protection and for research
  + Sufficient availability of resources such as gases, cryogens, spare parts, samples, lab animals, etc.
  + Sufficient availability of needed facilities, i.e., performance spaces, data enclaves, libraries, core facilities, etc.
  + Plan to address safety issues that may have arisen during shutdown
  + Clear lines of responsibility and reporting requirements for following the plan and maintaining conditions appropriate to the pandemic
  + Training materials, methods, and procedures that address the challenges associated with restarting research (e.g., how to don and doff PPE, social distance on- and off-campus, etc.)
  + The requirements to work with laboratory animals who need special schedules and may themselves be susceptible to infection.

**4. Assuming limited resources in funding, space, support personnel, and PPE, how should different in-person research efforts be prioritized for restoration?**

While most universities will likely take a broad approach to restoring research efforts, some may need to set priorities for which research efforts return to more typical operations first. Criteria for prioritization might include:

* + Risk related to the spread of COVID
  + Potential health-related benefits of the efforts (related and unrelated to COVID)
  + Potential policy-related benefits of the efforts (related and unrelated to COVID)
  + Potential fundamental scholarly significance of the efforts
  + National security implications of the research
  + Requirements of sponsors, i.e., the possibility of losing funds
  + Potential for seeding new sponsored research
  + Impact on the careers of faculty, especially early-career faculty
  + Impact on the careers and training of students and postdocs
  + Need for PPE in the research, relative to availability
  + Time sensitivity of research, e.g., for observational studies or use of external facilities
  + Alignment with the strategic goals of the university
  + Costs of starting a paused research program, especially if not covered by a sponsor
  + Requirements for custodial or other non-research staff efforts (i.e., sanitizing workspace, disposal of hazardous waste, care of lab animals, safety inspections)
  + Requirements for engagement with human subjects
  + Requirements for visitors or technical support staff from outside the university
  + Requirements for other facilities to be available (i.e., core facilities)
  + Possible loss of data from a long-running longitudinal study being suspended

**5. How will rules of conduct related to health risks be enforced, and what sort of appeals will be allowed for special circumstances?**

Universities may wish to set up safety committees, inspections, or other means to ensure that social distancing plans are being followed. They may also want to use their existing ethics or other hotlines to report violations. Special consideration will be needed regarding isolation of infected individuals, since there will be significant privacy concerns, and, in some instances, a research project may require specialized expertise to shut down. University leadership will undoubtedly be questioned on many local decisions, and they will typically want to make the decision process clear for how access to research on campus is restored, and the constraints that are imposed. University leaders may also want a process in place for researchers to appeal decisions as new information develops and as the situation changes.

**6. How will universities approach decision-making within a tradition of decentralized control?**

Universities are highly decentralized, and most follow a tradition of shared governance. In the face of a pandemic, different academic units may want to restore regular research activities at different rates, but an atypically higher level of centralized control may have advantages. For example, a centralized approach toward the purchase of PPE may be more efficient than having multiple small units each working on separate purchases. Clarity on the roles of unit leaders at different levels of the university will allow research to ramp up more efficiently, especially since different leaders may have different tolerances for risk or different priorities. If principal investigators are vested with significant responsibility for safety compliance, they may need additional training and support in fulfilling this responsibility.

**7. What criteria should be set for reversing or accelerating a ramp-up of research, in case the prevalence of COVID-19 or other conditions change?**

Universities should be ready for a resurgence of infections, but also for changes in recommended best practices for interpersonal interactions, and for testing and prevention of transmission. University administrators should have contingency plans in place, a sense for the criteria that would induce a change in approach, and a decision tree for scaling back research operations or adopting new procedures as conditions evolve. Some studies, for example work with human subjects, are particularly difficult to start up and stop again, and the impact and cost of such work should be taken into consideration. At the same time, plans should allow for faster ramp-up if public health conditions improve unexpectedly.

**8.** **How** **will universities protect people who are especially vulnerable to the effects of COVID-19 infection and insist on being on campus?**

Some researchers, students, and support staff are in high-risk groups, or share housing with people in high risk groups, and are particularly susceptible to serious consequences of an infection. A fraction of these will be passionate about their research activities, to the extent that they might disregard the risks to themselves. Universities will need to consider how to make special accommodations for such individuals, or how to request that they, and all researchers, acknowledge personal risk of infection. Some of these individuals may not want to share their personal health information about their risk factors, creating privacy concerns and civil liberty issues.

**9.** **How will universities enable in-person research involving human subjects, both clinical and non-clinical?**

Many studies involving human subjects have been paused to allow for social distancing. The criteria for restarting such human subject studies will undoubtedly be different for clinical trials where there is a possible therapeutic effect on the participants, from those studies that have no clinical benefit to the participants. Since in-person contact will carry some risk of infection, the consideration of possible risk to the human subjects will necessarily be part of IRB deliberations. The risks of travel, especially via public transportation, to engage in the study, by both university researchers and the participants, also bears some consideration in decisions to proceed with such studies. Universities will want to consider the impact of studies stopped in mid-stream by the pandemic, especially those of long duration that rely on longitudinal data.

**10. How will universities support people who are stuck overseas or who are unable to return to in-person engagement with research for other reasons (e.g., family care responsibilities, personal susceptibility to infection)?**

Some researchers, and especially graduate students and trainees, are geographically separated from the university and are unable to return for financial, visa, or other reasons. University leaders will need to consider what accommodations should be made for such researchers if their research is enabled except for their personal separation from campus. This could be especially difficult for non-citizens, who are overseas and may not be eligible to be paid, or whose effort may become formally designated as international activity, with consequences for grant conditions.

Similar issues will arise for students, staff, and faculty who have family care obligations or personal health reasons that do not allow them to return to regular work outside the home. Issues may include appropriate oversight, mentoring, internet access, and access to secure or large data sets. Researchers with young children may need special consideration to allow them the freedom to focus on their research – even if they do not leave the home.

**11. How will universities support and train undergraduate researchers for whom research is an essential part of their education?**

Active engagement in research is often considered an essential part of the undergraduate educational experience. For some students, undergraduate education will become entirely online for a time, and universities will need to explore alternative means to enable a substitute for in-person research experiences. When undergraduates return to a campus, research experiences that increase in-person contact may still need to be curtailed to protect the students and others and to deal appropriately with a limited supply of PPE.

**12. How** **will universities treat the salaries of people who are expecting support from grants and contracts, but are unable to perform some or all of the work envisioned under the agreement?**

Grant and contract terms and conditions typically specify the work that should be accomplished. This work may not be compatible with the conditions under which research is conducted in the coming months, and therefore a source of salary may not be available. This can include the salary for researchers who are supported entirely from grants, i.e., soft money appointments, but also the summer salary for faculty on nine-month appointments as well as new graduate student and postdoc appointments.

**13. How and when will travel be allowed on university or sponsor funds?**

Research depending on travel includes archival research, ethnographic research, and field research in departments as diverse as glaciology, ornithology, and archeology. Travel is also required for the use of large scientific facilities such as synchrotrons and telescopes, as well as many smaller facilities. This travel could be across the globe, or simply to a nearby location off campus. The research enterprise also depends on regular meetings and conferences in which the informal discussions are often a critical component. Many universities have placed strong restrictions on research-related travel, for the safety of the researchers, but also to avoid new sources of infection upon return to campus. As part of restoring research activity, universities will need to decide how and when those restrictions are lifted, and under what criteria researchers will be allowed to travel.

**14. What reconfigurations of physical space or assignment of space to research groups might be made to accommodate research activities?**

Research spaces have been designed to support research activities, typically for the efficient use of expensive buildings, and often with large shared spaces as the norm. Universities may need to consider reconfiguring spaces to enable better separation. This could include moving workstations within a laboratory environment, but it also could include reassignment of offices to reduce the number of people in a given office. For example, experimental laboratory students need to be in campus buildings to do their work, while computational students can work remotely more easily; thus, student office space might be temporarily reassigned to reduce local density within a building.

**15. For graduate students returning to on-campus housing, what new facility practices may be needed?**

Most commercial buildings and large residential buildings are incorporating more significant, regular cleaning of public spaces and new means to handle increased deliveries. For university-owned housing, new practices will need to be considered.

**16. How can universities encourage appropriate social distancing off-campus?**

A university can put in place numerous and effective means to provide social distancing on-campus, but if members of the research community choose not to socially distance off-campus, then the effectiveness of on-campus efforts will be lessened. This might be a particular problem for younger members of the community who are considered less vulnerable, or for those who do not have the resources or housing to enable easy social distancing. A strong communication strategy about more general best practices, within the work environment and beyond, may be needed.